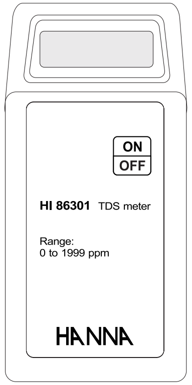
Instruction Manual

HI 86301 • HI 86302
HI 86303 • HI 86304
TDS and EC Meters



HANNA instruments®

www.hannainst.com

WARRANTY

These instruments are guaranteed for two years against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. **Probes are guaranteed for six months**. This warranty is limited to repair or replacement free of charge. Damages due to accidents, misuse, tampering or lack of prescribed maintenance are not covered. If service is required, contact the dealer from whom you purchased the instrument. If under warranty, report the model number, date of purchase, serial number and the nature of the failure. If the repair is not covered by the warranty, you will be notified of the charges incurred. If the instrument is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization Number from the Customer Service department and then send it with shipment costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

Dear Customer,

Thank you for choosing a Hanna product.

Please read carefully this instruction manual before using the meter. If you need additional technical information, do not hesitate to e-mail us at **tech@hannainst.com**.

These instruments are in compliance with the CE directives.

PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it carefully. If any damage has occurred during shipment, immediately notify your Dealer or the nearest Hanna Customer Service Center.

Each meter is supplied with:

- Conductivity probe
  - **HI 7634D/1** for **HI 86301** and **HI 86303**
  - **HI 7632D/1** for **HI 86302** and **HI 86304**
- Calibration solution sachet (20 mL)
  - **HI 70031** (1413 µS/cm) for **HI 86303**
  - **HI 70039** (5.00 mS/cm) for **HI 86304**
  - **HI 70032** (1382 ppm) for **HI 86301** & **HI 86302**
- Battery, screwdriver & instructions

Note: Conserve all packing material until the instrument has been observed to function correctly. Any defective item must be returned in its original packing.

GENERAL DESCRIPTION

These EC and TDS portable meters have been designed for simplicity of use, and provide accurate measurements.

Readings are automatically compensated for temperature variations, and the calibration is manually performed at one point through trimmer.

The BEPS (Battery Error Prevention System) automatically switches the meter off when the battery level is too low to ensure reliable readings.

The housing has been completely sealed against humidity, for use in any type of environment.

The probe is easy to clean and requires little maintenance.

Choose the model with the measurement range that best fits your application:

- **HI 86301** reads TDS from 0 to 1999 ppm (mg/L)
- **HI 86302** reads TDS from 0.00 to 10.00 ppt (g/L)
- **HI 86303** reads EC from 0 to 1999 µS/cm
- **HI 86304** reads EC from 0.00 to 19.99 mS/cm

SPECIFICATIONS

TDS Models

	HI 86301	HI 86302
Range	0 to 1999 ppm	0.00 to 10.00 ppt
Resolution	1 ppm	0.01 ppt
Accuracy	±2% f.s	
Calibration	Manual, 1 point, through trimmer in the battery compartment	
Probe (included)	HI 7634D/1	HI 7632D/1
Temp.Compensation	Automatic, 0 to 50°C (32 to 122°F) with β=2%/°C	
Environment	0 to 50 °C (32 to 122°F); RH max 100%	
Battery Type	1 x 9V alkaline	
Battery Life	Approx. 300 hours	Approx. 150 hours
Dimensions	164 x 76 x 45 mm (6.4 x 3.0 x 1.8”)	
Weight	250 g (8.8 oz.)	

EC Models

	HI 86303	HI 86304
Range	0 to 1999 µS/cm	0.00 to 19.99 mS/cm
Resolution	1 µS/cm	0.01 mS/cm
Accuracy	±2% f.s	
Calibration	Manual, 1 point, through trimmer in the battery compartment	
Probe (included)	HI 7634D/1	HI 7632D/1
Temp.Compensation	Automatic, 0 to 50°C (32 to 122°F) with β=2%/°C	
Environment	0 to 50 °C (32 to 122°F); RH max 100%	
Battery Type	1 x 9V alkaline	
Battery Life	Approx. 300 hours	Approx. 150 hours
Dimensions	164 x 76 x 45 mm (6.4 x 3.0 x 1.8”)	
Weight	250 g (8.8 oz.)	

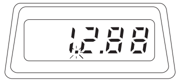
Hanna Instruments reserves the right to modify the design, construction and appearance of its products without advance notice.

TAKING MEASUREMENTS

- Each meter is supplied complete with a 9V alkaline battery. Remove the battery compartment cover on the rear of the meter and install the battery while paying attention to the correct polarity (see also "Battery Replacement" section).
- Connect the probe to the DIN plug on the top of the meter, and switch the instrument on by pressing the ON/OFF button.
- Immerse the probe into the solution to be tested. For best accuracy, the probe should not touch or stand close to the vessel's walls or bottom. If possible, use plastic beakers to minimize any EMC interference.
- Tap the probe gently on the bottom and shake it, to make sure no air bubbles have remained trapped inside.
- Allow the reading to stabilize. The LCD will show the EC or TDS value automatically compensated for temperature effects.

BATTERY REPLACEMENT

When the battery becomes weak the meters will display an additional blinking decimal point. When the low battery indicator appears, only a few hours of battery life are left.



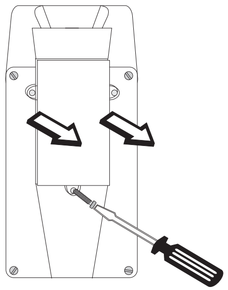
In addition, these instruments are provided with BEPS (Battery Error Prevention System) that automatically turns the meter off when the battery level is too low to ensure reliable readings.

It is recommended to replace the battery immediately.

Battery replacement must only take place in a nonhazardous area using a 9V alkaline battery.

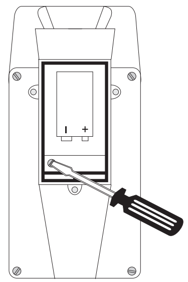
Unscrew the three screws on the rear of the meter, remove the battery compartment cover and replace the 9V battery with a new one.

Make sure the battery contacts are tight and secure before replacing the cover.



CALIBRATION

- Pour a small quantity of the proper calibration solution in a beaker (**HI 7031** for **HI 86303**, **HI 7032** for **HI 86301** and **HI 86302**, **HI 7039** for **HI 86304**). If possible, use plastic beakers to minimize any EMC interference.
- The calibration is a manual, 1-point procedure through trimmer. To access the calibration trimmer, remove the battery compartment cover on the rear of the meter.
- Turn the meter on and immerse the probe in the calibration solution, making sure that the metal pins are completely submerged and the probe body does not touch nor stand close to the side walls of the beaker.
- Tap the probe gently on the bottom and shake it, to make sure no air bubbles have remained trapped inside.
- Wait for a couple of minutes for thermal equilibrium to be reached and the temperature to be compensated, then adjust the calibration trimmer with the supplied screwdriver until the display shows the calibration solution value.



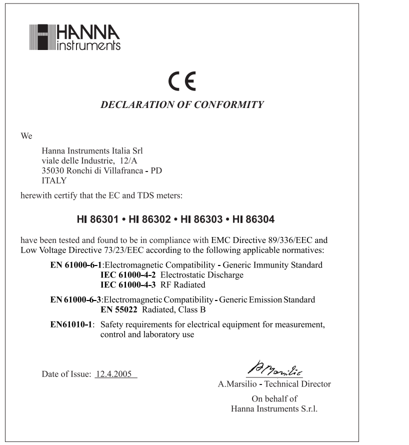
Calibration is now complete.

PROBE MAINTENANCE

It is recommended to clean the probe at least once a month, by following this procedure:

- Immerse the tip of the probe in the **HI 7061** cleaning solution for half an hour.
- If a more thorough cleaning is required, brush the metal pins with very fine sandpaper.
- After cleaning, rinse the probe with tap water and recalibrate the instrument.

CE DECLARATION OF CONFORMITY



DECLARATION OF CONFORMITY

We

Hanna Instruments Italia Srl
viale delle Industrie, 12/A
35030 Ronchi di Villafranca - PD
ITALY

herewith certify that the EC and TDS meters:

HI 86301 • HI 86302 • HI 86303 • HI 86304

have been tested and found to be in compliance with EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC according to the following applicable normatives:

EN 61000-6-1:Electromagnetic Compatibility - Generic Immunity Standard
IEC 61000-4-2 Electrostatic Discharge
IEC 61000-4-3 RF Radiated

EN 61000-6-3:Electromagnetic Compatibility - Generic Emission Standard
EN 55022 Radiated, Class B

EN61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use

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A.Marsilio - Technical Director
On behalf of
Hanna Instruments S.r.l.

Recommendations for Users

Before using these products, make sure that they are entirely suitable for the environment in which it is used. Operation of these instruments in residential areas could cause unacceptable interferences to radio and TV equipment. Any variation introduced by the user to the supplied equipment may degrade the instruments' EMC performance. To avoid electrical shock, do not use this instrument when voltage at the measurement surface exceeds 24 Vac or 60 Vdc. To avoid damage or burns, do not perform any measurement in microwave ovens.

ACCESSORIES

HI 7632D/1	Conductivity probe, HR, with built-in temperature sensor, DIN connector and 1 m (3.3') cable
HI 7634D/1	Conductivity probe, LR, with built-in temperature sensor, DIN connector and 1 m (3.3') cable
HI 70031P	1413 μS/cm solution, 20 mL sachet (25 pcs)
HI 7031M	1413 μS/cm solution, 230 mL bottle
HI 7031L	1413 μS/cm solution, 500 mL bottle
HI 70032P	1382 ppm solution, 20 mL sachet (25 pcs)
HI 7032M	1382 ppm solution, 230 mL bottle
HI 7032L	1382 ppm solution, 500 mL bottle
HI 70039P	5.00 mS/cm solution, 20 mL sachet (25 pcs)
HI 7039M	5.00 mS/cm solution, 230 mL bottle
HI 7039L	5.00 mS/cm solution, 500 mL bottle
HI 7061M	Cleaning solution, 230 mL bottle
HI 7061L	Cleaning solution, 500 mL bottle
HI 731326	Calibration screwdriver (20 pcs)